ABSTRACT

Charles University in Prague, Faculty of Pharmacy in Hradec Králové
Department of Analytical Chemistry
Candidate **Mgr. Martina Dvořáková**
Consultant **Doc. RNDr. Marii Pospíšilové, CSc**
Title of Thesis **Determination of flavonoids in food supplements using micellar electrokinetic capillary chromatography**

A new method of micellar electrokinetic chromatography (MEKC) with UV detection for the simultaneous determination of catechin, epicatechin, rutin, quercetin, luteolin, hesperetin, kaempferol, apigenin and isorhamnetin was devised and validated.
The MEKC analysis was optimized for the type, concentration and pH* of the background electrolyte, the concentration of sodium dodecyl sulphate (SDS), the type and concentration of cyclodextrins and organic solvents, applied voltage and operating temperature.
The analysis was carried out in a fused-silica capillary (internal diameter 75 µm, total length 60 cm, effective length 50 cm) with UV detection at 210 nm, voltage 30 kV, hydrodynamic sample injection at 50 mbar for 6 s and temperature 20°C.
The optimal background elektrolyte of pH* 7.6 (adjusted with 17% of ammonia solution) contained 5 mM potassium dihydrogen phosphate + 30 mM boric acid, 60 mM SDS, 20% (v/v) of methanol, 5% (v/v) of butanol and 8 mM 2-hydroxypropyl-γ-cyclodextrin.
The calibration curve of flavonoids were carried out with correlation coefficients ranging from 0.9982 to 0.9999. Propylparaben was used as an internal standard.
The repeatability of the method for the peak areas is characterized by the RSD in a range from 1.84 to 4.72% (n = 6). The separation time took about 24 min.
The MEKC was applied for the assay of flavonoid constituents of Ginkgo biloba extract in a nutraceutical Ginkgo, tablets; RSD = 1.84-4.72% (n = 3). SPE was used for a sample pretreatment.

Keywords: Micellar electrokinetic chromatography (MEKC); flavonoids; Ginkgo biloba